



# **Modeling and Simulation Technical Working Group (M&S TWG)**

## **Status Update**

**Briefing to AOG  
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# Outline

- **Background**
- **Structure / Organization**
- **Objectives / Responsibilities**
- **Relationship of M&S to DII COE**
- **Draft Implementation Plan**

# M&S TWG Background

- **Study Group: Summer 99**
  - “Should an M&S WG be established?”
- **TWG Chartered by AOG: Dec 99**
  - “Make recommendations on M&S Issues related to the DII COE
- **First Meeting: 22 Feb 00, DMSO**
  - Establish leads, discuss objectives and goals
  - Briefings by ESC (HLA Segmentation), NRL (GCCS HLA Interface)
- **Next Meeting: 25 May 00 (Tentative), DMSO**
  - Agree upon implementation plan
    - Establish Schedule, Milestones
  - Assignments of actions

# Organization / Structure

- **DMSO chair:**
  - Zach Furness, DMSO/MITRE
- **Service leads:**
  - Army: LTC Ken Wilson, AMSO
  - Navy: Mr. Jim Weatherly, NAVMSMO
  - Air Force: Maj Mark Porter, AFAMS
  - Marine Corps: TBD
- **Widespread interest and participation by other organizations**
  - DISA, SISO (C4I-Sim Study Group), JWFC, NRL, STRICOM

# Objectives of the M&S TWG

- **Address issues related to improving interoperability between M&S and C4I Systems**
  - Why? DII COE is strongly oriented toward the interoperability of C4I systems
  - Significant issues related to M&S -C4I Interoperability that could be solved via the DII COE
    - Multiple stovepiped interfaces that replicate functionality
    - Lack of interoperability between M&S and C4I
- **Limit involvement on issues not related M&S-C4I Interoperability:**
  - accuracy, validity of M&S systems

# Responsibilities of M&S TWG

- **Identification of DII COE M&S requirements from community**
- **Documentation of DII COE M&S Requirements in SRS**
- **Recommendations on M&S issues related to the COE**
- **Interaction with other TWGs on common M&S Issues**
- **Coordination of Implementation of M&S COE products**

# What Do We Mean by M&S?

- **Simulations**

- Software processes that represent the temporal aspects of some natural or man-made process
  - wargames, network simulations, flight simulators

- **Models**

- Description (via an algorithm or set of rules) of some physical phenomenon that may or may not represent temporal aspects
  - mathematical equations, process diagrams, algorithms

- **Interfaces**

- Components that provide translation of data formats between M&S systems (and possibly other non-M&S systems)
  - Message Generators, Order Interfaces

- **Infrastructure**

- Software products that address **wide-spread** interoperability between M&S systems (and possibly other non-M&S systems)
  - HLA, DIS, ALSP

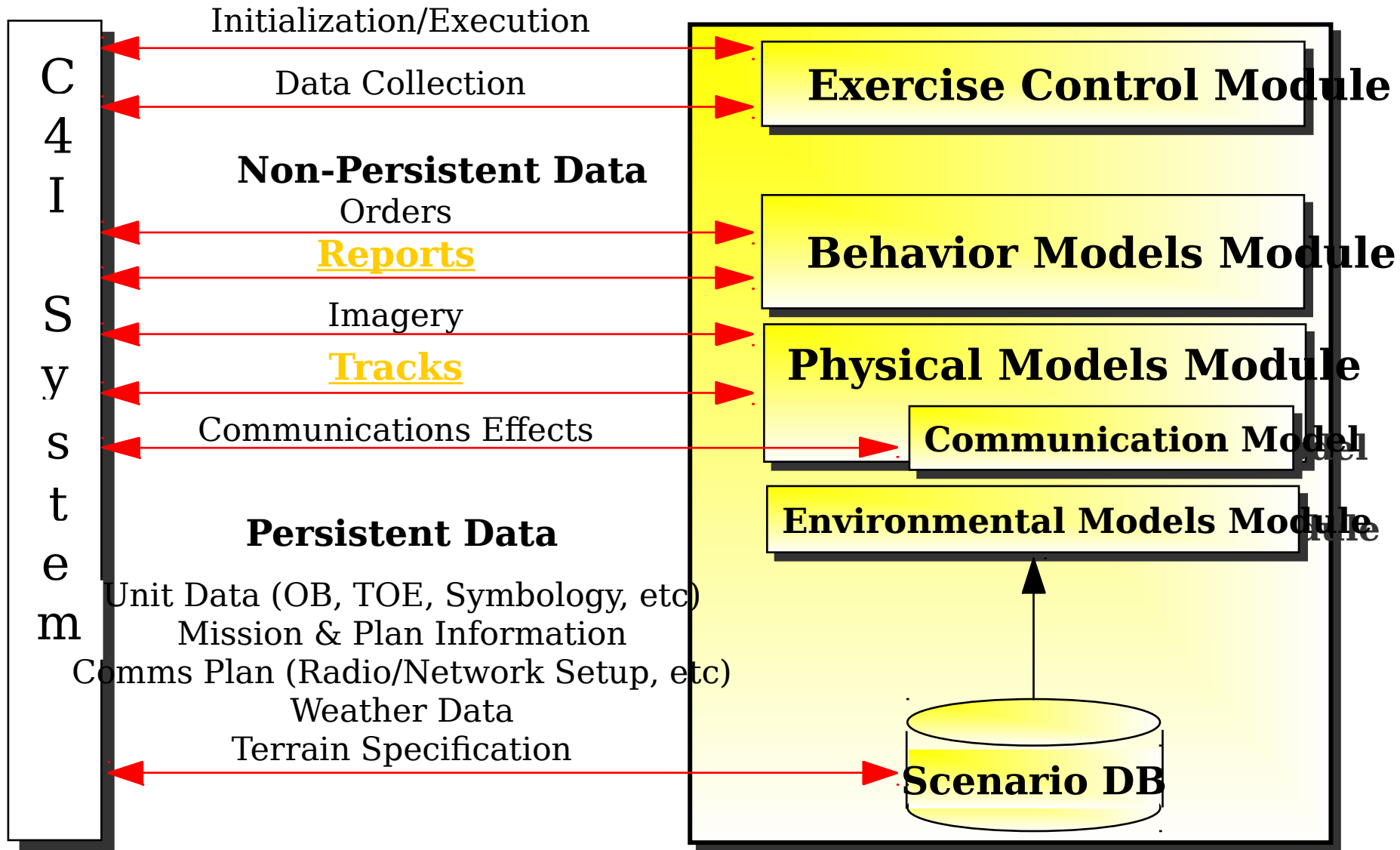
- **Tools**

- Tools that provide users the ability to monitor, manage groups of M&S applications
  - Data collection tools, AAR tools, Monitoring GUIs, etc.

# Range of C4I-to-M&S Data Exchanges

*(between a notional C4I system and Simulation)*

## Exercise Control Interactions





# Why Incorporate M&S Functions Into the COE?

- **Many reasons to pursue M&S-C4I interoperability, but at least two compelling reasons to bring into the COE (i.e., run applications on same C4I HW):**
  - Training: M&S Systems increasingly used for mission rehearsal when deployed
    - Not economical/feasible to deploy separate systems just to run M&S applications
  - Decision Support: By embedding M&S in C4I applications, the warfighter has a mechanism for analyzing courses of action in the field

# Why HLA in COE?

- ✓ HLA is mandated in the JTA and there are a number of HLA users that operate within the DII COE. HLA is the DoD-wide M&S architecture
- ✓ Facilitates the Warfighter's training and operational needs. Can help link M&S and C4I systems so that simulations can be used as Course of Action Analysis and Mission Rehearsal tools, as well as provide individual and collective embedded training.
- ✓ Key to effective testing and Joint Experimentation. Supports "Man in the loop" and horizontal vs stovepipe testing.
- ✓ HLA/RTI v1.3 is available and has been run with the DII COE v3.3 and initial assessment is that it is easy to segment.

# Draft Implementation Plan

## (1 of 3)

- **Near Term (May-Oct 00)**
  - Segmentation of HLA RTI into the DII COE
    - Recommendation of M&S Study Group
    - Feasibility demonstrated in FY99, by segmenting beta version of RTI v1.3 NG (Mission Application)
    - FY00 work would segment RTI v1.3 NG *within* COE
      - Common Support App or Infrastructure Service?
    - Gain experience in working through AOG processes

# Draft Implementation Plan

## (2 of 3)

- **Near Term (May-Oct 00)**
  - Establish Process for collecting M&S Requirements and Recommending M&S Products
    - Piggyback on DMSO M&S Requirements Management Process
      - Coordinates warfighter requirements amongst services
      - Focus on requirements related to M&S-C4I interoperability
    - Work through service leads
    - Establish Draft SRS
  - Establish candidate list of M&S products for inclusion in DII COE
    - Determine criteria for recommendation of M&S products
    - Solicit inputs from services

# Draft Implementation Plan

## (3 of 3)

- **Long Term (>Oct 00)**

- Evaluate segmentation of RTI v1516 into DII COE
  - RTI 1516 available late '00
- Refine M&S candidate list, evaluate, and make recommendations for inclusion in COE
- Widen interaction between M&S TWG and other TWGs
- Define Exit Criteria
  - How do we know when we're done?
  - Measure of success for increased M&S-C4I interoperability?

# Potential Interactions with Other AOG TWGs

- **Message Processing TWG**
  - M&S systems used extensively to drive C4I systems in joint exercises
- **Real time TWG**
  - real-time M&S requirements in joint exercises
- **Communication Services**
  - M&S communication simulations used to portray degradation effects on C4I systems in exercises
- **Common Operational Picture**
  - M&S systems used to generate COP during exercises
- **Mapping, Charting, Geodesy, Imagery**
  - Consistency of M&S map data and C4I map data significant problem
- **Distributed Computing and Object Mgmt Services**
  - M&S applications often distributed

## C4I Interoperability Related to the COE

- **Discrepancies between Simulation time and Real time**
  - Most simulations represent the flow of time independent of real (or “wall clock”) time that C4I Systems use
  - Current solutions directed at running the simulations at 1:1 with real time, so as not to perturb C4I systems
- **Database Alignment**
  - Just beginning to develop means of exchanging data between different M&S databases (SEDRIS)
  - Next step is in improved methods for exchange of C4I-M&S databases

# Administrivia

- **Email Reflector:**
  - To Subscribe, send email to:  
**mstwg-info-subscribe@lists.dmso.mil**
- **Web Page:**
  - Final URL TBD
  - In mean time, attempting to post relevant minutes, briefings on DISA AOG Web Page